

U.S. Department of Energy
Technical Qualification Program

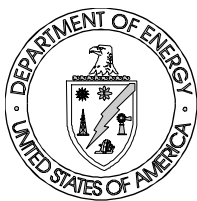
Technical Training Topical Area

Study Guide

For the

*Facility Representative
Qualification Standard*

August 1996



Competency 3.2 A Facility Representative shall demonstrate a familiarity level knowledge of the training and qualification requirements for nuclear facility operations personnel.

1. Supporting Knowledge and Skills

- a. Describe the five elements of a systematic approach to training.
- b. Discuss the relationship between training, risk, and safe facility operations.
- c. Discuss key elements of an effective on-the-job training program.
- d. Using contractor training procedures, applicable Department of Energy Orders, and DOE Standard 1070-94, "Guidelines for Evaluation of Nuclear Facility Training Programs," select three elements of the contractor training program and assess for compliance and adequacy.

2. Self-Study Activities

- NOTES:
- The DOE Orders are in a state of transition. Please refer to the following gopher site for a cross reference of new and old Orders:
gopher://VM1.HQADMIN.DOE.GOV:70/00/doemenu1/directiv/251cross.asc
 - Below are two web sites containing many of the references you may need.

Web Sites		
Organization	Site Location	Notes
Department of Energy	http://cted.inel.gov/cted/index.html	DOE Standards, Guides, and Orders.
U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

Read pages xiii through xv, 1-7, 2-1, 3-1, 4-1, 5-1 through 5-4, and 5-6 through 5-9 of *The Occasional Trainer's Handbook*.

EXERCISE 3.2-A Summarize the five phases of the systematic approach to training: analysis, design, development, implementation, and evaluation.



Read page 2 of DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*.

EXERCISE 3.2-B Using DOE Order 5480.20A, page 5, discuss the relationship between training, risk, and safe facility operations.

Read DOE-STD-1056-93, U.S. Department of Energy Guideline, *Guide to Good Practices for On-Site Job Training*.

EXERCISE 3.2-C Discuss the key elements of an effective on-the-job training program.

Read DOE-STD-1070-94, U.S. Department of Energy Standard, *Guideline for Evaluation of Nuclear Facility Training Programs*.

EXERCISE 3.2-D Using DOE-STD-1070-94, pages 41 through 43, list the seven criteria identified for training program evaluation.

EXERCISE 3.2-E Select three elements of the contractor training program and using the criteria found in Exercise 3.2-D, assess compliance and adequacy.

3. Summary

The facility's training organization and programs should be evaluated periodically to determine whether they are achieving the established goals and objectives. The effectiveness of training programs to produce qualified personnel should also be evaluated periodically. This should be accomplished by reviewing operating occurrences, interviewing job incumbents and first-line supervisors, observing operations, etc. The results of these evaluations, if used correctly, will help ensure a facility of safe, efficient, and reliable operations.

The following considerations should be emphasized when evaluating training and qualification programs:

- The responsibility for monitoring indicators, analyzing data, and approving revisions is clearly defined.
- The training department is alerted to facility operating, maintenance, and industrial safety experiences.
- Communication on training effectiveness occurs between plant supervisors and the training department.
- Employee opinion of the equality and effectiveness of training is collected periodically.
- The training department is alerted to employee performance errors.



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- The training department meets with maintenance and operations supervisors and engineers to determine potential training problems.
- Training uses facility inspection and evaluation reports to guide program revisions.
- Facility modifications and procedure changes are monitored for training consequences.
- Training monitors industry operating and maintenance experiences for program impacts.
- Regulatory changes are reviewed for training consequences.
- Program performance data are analyzed.
- Proposed changes are reviewed by appropriate facility and training personnel.
- Training changes are tracked.

Evaluation of a technical training and qualification program activity typically includes the following criteria, as a minimum:

Criteria	Applications
Are the materials prepared at a level of skills and knowledge appropriate to the trainees?	Determine whether material content can be related to expected entry-level skills and knowledge, including appropriate reading level of the trainees.
Are the materials clearly written and presented so the trainee can complete the required learning activities?	Determine whether selected trainees can use the materials and complete the learning activities.
Do the materials reflect the learning objectives of the desired program?	Assess the material, comparing the learning objectives to those of the desired program, and determine which learning objectives are not covered adequately.
Are the materials consistent with other materials used in the training program or the mastery of the learning objectives?	Analyze sets of materials to determine whether they are supportive and provide an effective progression of learning.
Do the materials conform to the learning activities of the desired program?	Analyze the materials, comparing the learning activities to those of the desired program. Identify any deficiencies.
Are the materials practical for use in the given facility situation?	Determine whether the materials can be used in facilities with available equipment, time, and space, and with the number of trainees planned.



4. Exercise Solutions

EXERCISE 3.2-A Summarize the five phases of the systematic approach to training: analysis, design, development, implementation, and evaluation.

ANSWER 3.2-A The following is a concise summary of each of the five phases of the systematic approach to training:

Analysis ensures training activities are oriented to job requirements by identifying the specific tasks involved in a given job. Training requirements are determined by analyzing the job and its component tasks. Organizational needs are also assessed to determine the resources required to support identified training requirements.

Design begins with developing terminal and enabling objectives based on information gathered from the analysis phase. Skills and knowledge associated with performing a task well are translated into enabling objectives. The objectives are then organized into instructional units and sequenced to aid the learning process. The objectives become the guides for the development of learning strategies, course content, and training materials. Additional design activities include identifying the appropriate training setting, developing test items and examinations (also done in the next phase), and documenting key components of this phase.

Development is the actual preparation of lesson plans, instructor guides, training aids, and training materials. Formulation of additional enabling objectives and revisions of test items and objectives may also occur. Both technical and instructional reviews of the products are conducted, and changes are made as necessary to ensure the content is both technically and educationally correct and relevant.

Implementation consists of resource allocation, planning, and scheduling, as well as the actual conduct of training. Resource allocation includes assigning instructors and support staff and scheduling training in facilities.



Evaluation is the critical feedback loop to ensure that the training meets its objectives. Feedback from instructors, trainees, evaluators, and supervisors is reviewed for its potential refinement of future training. Evaluation is a continuing action that occurs throughout the entire process and beyond. Evaluation results are translated into change actions or recommendations based on different criteria such as adequacy of content, tests, presentation, or documentation, and post-training job performance.

EXERCISE 3.2-B Using DOE Order 5480.20A, page 5, discuss the relationship between training, risk, and safe facility operations.

ANSWER 3.2-B A discussion of training, risk, and safe facility operations is found in the “policy and objectives” statement:

DOE objectives are to ensure the development and implementation of contractor-administered training programs that provide consistent and effective training for personnel at DOE nuclear facilities. This Order contains minimum requirements that must be included in training and qualification programs. The requirements are based on DOE, NRC, and related industry standards, and are applicable to all operable DOE nuclear facilities. Because the operation of Department of Energy reactor and non-reactor nuclear facilities involves certain risks to employees, the public, and the environment, well trained and qualified operating organization personnel are of extreme importance. A vital element in ensuring a well trained and qualified work force is the implementation of a systematic approach to training (SAT). This approach has proven effective in the commercial nuclear power industry and in other major industries; therefore, the Department requires that training programs for personnel in the operating organization at DOE nuclear facilities are established using a systematic approach to training. Experience has also shown that the better operating nuclear facilities have well-defined, effectively administered policies and procedures to control the activities associated with personnel training. This Order requires the establishment and implementation of certain training-related procedures. Implementation of the requirements of this Order will meet 10 CFR 830.120, *Criteria 2-Personnel Training and Qualification*.



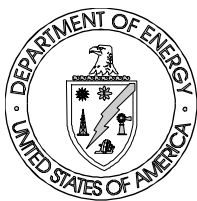
EXERCISE 3.2-C Discuss the key elements of an effective on-the-job training program.

ANSWER 3.2-C On-the-job training is practical hands-on training in which employees achieve learning objectives through training conducted in the job environment. OJT is a formal part of the training program. This aspect of an individual's training is normally conducted in the facility as part of his day-to-day work activities. Accordingly, supervisors and selected experienced craftsmen are directly involved in OJT. Some key elements of OJT are listed below:

- OJT Program Adherence--OJT should be conducted in accordance with formally defined training programs that specifically identify items the trainee must accomplish.
- OJT Trainer Qualification--OJT should be conducted by personnel who have successfully qualified as OJT trainers.
- Trainee Supervision and Control--A qualified OJT instructor should observe the work so that the trainee properly accomplishes the activity and understands how to avoid errors that could affect personnel safety or adversely impact the station.

The trainer should review any information recorded by the trainee on official work and data sheets and stress to the trainee the importance of maintaining accurate training and facility records.

- Number of Trainees--To determine the number of trainees allowed to simultaneously participate in any particular training evolution, the trainer should consider training effectiveness and the effect on the equipment being maintained.
- Trainee Conduct--The manager should establish a policy that allows trainees to independently perform work only on equipment for which they are qualified.



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EXERCISE 3.2-D Using DOE-STD-1070-94, pages 41 through 43, list the seven criteria identified for training program evaluation.

ANSWER 3.2-D

Criteria for Training Program Evaluation as noted in DOE-STD-1070-94	
Criteria	Statement
8.1	A comprehensive evaluation of individual training programs is conducted by qualified individuals on a periodic basis to identify program strengths and weaknesses.
8.2	Instructional skills and technical competencies of instructors are evaluated regularly.
8.3	Feedback from trainee performance during training is used to evaluate and refine the training program. Feedback from former trainees and their supervisors is used to evaluate and refine the training program.
8.4	Change actions (e.g., procedure changes, equipment changes, facility-specific and operating experience) are monitored and evaluated for their applicability to initial and continuing training programs and are incorporated in a timely manner. Changes in job scope are evaluated to determine the need for revision of initial and continuing training programs.
8.5	Improvements and changes to initial and continuing training are systematically initiated, evaluated, tracked, and incorporated to correct training deficiencies and performance problems.
8.6	Training materials are maintained current, based upon the results of training program evaluations.
8.7	Training facilities are evaluated to determine their effect on the training process.

EXERCISE 3.2-E Select three elements of the contractor training program and using the criteria found in Exercise 3.2-D, assess compliance and adequacy.

ANSWER 3.2-E Answer is site-specific.